Permutation & Combination

Date Planned : __ / __ / __	Daily Tutorial Sheet – 14	Expected Duration : 90 Min
Actual Date of Attempt : __ / __ / __	Level - 3	Exact Duration :_____

228. Consider a $n^2 \times n^2$ grid divided into n^2 sub grids of size $n \times n$. Find the number of ways in which you can select n^2 cells from this grid such that there is exactly one cell coming from each sub grid, one from each row and one from each column.

229. Find the number of ways in which n '1' and n '2' can be arranged in a row so that up-to any point in the row no. of '1' is more than or equal to no. of '2'.

230. At Vidyamandir Classes, every year starting from the third, the number of students in any year is equal to the sum of thrice of last year strength and eighteen times the strength of second last year. If in the first year the number of students were 6 and in the second year, they were 9, then find the total number of students a_n, in the nth year, $n \geq 3$.

231. Given any five-real numbers, prove that there are two of them, say x and y such that $0 < x - y < 1 + xy$.

232. Show that out of $n^2 + 1$ points lying within a unit square, there are two points whose distance from each other does not exceed $\frac{\sqrt{2}}{n}$.

233. For $n > 2$, find the number of ways in which one can place number 1, 2, 3, ... n^2 on the n^2 squares of the $n \times n$ chessboard, one on each, such that the numbers in each row and each column are in A.P.